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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/070,908 | 05/04/1998 | MITSUNORI SAKAMA | 0756-1799 | 4942 |

22204 7590 04/16/2002

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EXAMINER

PADGETT, MARIANNE L

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1762

33

DATE MAILED: 04/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Supplemental

Application No.

09/070,908

Applicant(s)

Mitsunori Sakama

Examiner

M.L. Padgett

Group Art Unit

1762

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 2/25/02 (IDS) + 3/29/02

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 23-29, 31-50 + 58-129

is/are pending in the application.

Of the above claim(s)

is/are withdrawn from consideration.

☐ Claim(s)

is/are allowed.

☒ Claim(s) 23-29, 31-50 + 58-129

is/are rejected.

☐ Claim(s)

is/are objected to.

☐ Claim(s)

are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 31

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

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1. This is a supplemental Office action to go with Paper No. 30. The IDS of 2/25/02 was matched to the PTO file after the mailing of the Office action of Paper No. 30, and is now made of record. The two references cited therein are noted to be overlapping inventive entities.

2. The non-statutory double patenting rejection, whether of the obvious-type or non-obvious-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Van Ornam*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); and *In re Goodman*, 29 USPQ 2d 2010 (Fed. Cir. 1993).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321 (b) and (c) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78 (d).

Effective January 1, 1994, a registered attorney or agent of record may sign a Terminal Disclaimer. A Terminal Disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 23-29, 45-50, 58-104, 106-110 and 113-129 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-63, or claims 1-5, 12-21 and 27-30 of U.S. Patent No. 6,281,147, or Patent No. 6,015,762, respectively in view of Gupta et al. (PN 6,289,843), and optionally considering Kozuka.

Both patents and applications have similar sequences of plasma steps using first gases and second gases, however the

patents are directed towards ramping the voltage from the first plasma to a second higher voltage for use during the deposition plasma step. The application is mainly directed towards maintaining pressure or gas flow during and between the first and second (deposition) plasma steps. While both patents and application have claims to generic gases, when specified the patents' first gas is a reactive gas, such as oxygen, and the application's first gas is a discharge gas which does not contribute to film formation, such as hydrogen.

Gupta et al. (843) also discusses a two stage plasma process, and uses pressure and gas flow maintenance as discussed in Paper No. 30 § No. 2, plus teaches ramping the RF power between the first and second plasmas. The introduction of the full complement of reactive gases is delayed until full plasma power is reached, in order to reduce incomplete reactions that occur before the plasma is at full power. Gupta et al.'s first plasma may consist of non-reactive gases such as inert gases like helium, or it may be a combination of inert gases and one of the reactive gases such as oxygen, which itself will not cause deposition. See the Abstract; column 2, lines 13-25 and 38-58; column 4, line 22 - column 5, line 27 and lines 45-57. Given the teachings of Gupta et al., it would have been obvious to one of ordinary skill in the art to use both ramping of the plasma's power/voltage during the two step plasmas, as well as maintenance

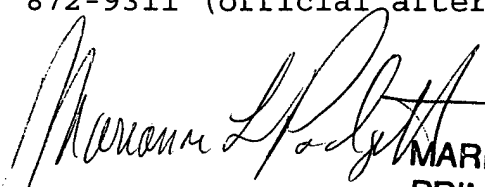
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of pressure and gas flow, because both are seen to be important for producing good quality interfaces between film depositions, such as those involving silicon containing gases like tetraethoxysilane.

While Gupta et al. generally teaches the use of non-reactive gases in the first stage of the plasma process, they do not specify that the non-reactive gas might be hydrogen as is claimed in some of the application claims. Hydrogen is well known for use as a carrier and discharge gas in plasmas, and forms no reaction products by itself, hence would have been an obvious option for the taught non-reactive gas, due to its conventional uses. Alternately, Kozuka as applied in Paper No. 30 § 2 has been seen to discuss two step plasmas with hydrogen gas used in the initial non-deposition plasma, hence it would have been further obvious to one of ordinary skill in the art that hydrogen would have been an appropriate first gas in the processes, particularly as generically claimed.

4. Any inquiry concerning this communication should be directed to M. L. Padgett from Monday through Friday from about 8 A.M. to 4:30 P.M. at telephone number (703) 308-2336 and FAX #703 305-5408 (official), 872-9311 (official after final) and 305-6078 (unofficial).

MLPadgett:cdc
April 15, 2002
April 12, 2002


MARIANNE PADGETT
PRIMARY EXAMINER
GROUP 1700